April 30, 2020

McGill | Faculty of Medicine

## Annual Reporting for Faculty Supported Research Centres and Networks

All Centres (provisional Centres; McGill Centres), Research groups and Networks that receive funding from the Faculty of Medicine are required to provide two components of reporting:

- Annual Report of Activities, Outcomes
- End-of-Year Financial Report/Proposed Budget

The Annual and End of Year Reports covering the period from the 1st May until the 30th April **are due by 4pm on May 26th 2017.** Future funding will be dependent on the prompt receipt of all documents as well as the evaluations made by the committee *and* the Faculty funds available.

The completed Annual Report and the Financial Statement should be forwarded by email to:

**Jennifer Clark (riac.med@mcgill.ca)**
**Faculty of Medicine Research Office**
**Phone: 514-398-5815**

**This is the final annual report for the McGill University Research Centre for Studies in Aging for the May 1st, 2016 to April 30, 2017 report period.**
An interim annual report and interim financial statement were presented at the Board of Director's meeting which took place on April 7th, 2017, on the grounds of the Centre.

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## Annual Report for Faculty of Medicine Funded Centres and Networks

The Annual Report should be set in the context of the Centre's, Core facility's and Network's overall goals and objectives, programs and research priorities, performance indicators outlined in the application (or subsequently developed), activities and strategies.

**Please provide the following:**

1. Name of Centre, Unit or Institute: McGill University Research Centre for Studies in Aging (MCSA)

2. Name and contact information of the Director and/or Administrative Assistant:

   Interim Director: Dr. Pedro Rosa-Neto, Neurologist, Alzheimer Disease Research Unit, Associate Professor of Neurology & Neurosurgery, Psychiatry and Pharmacology and Therapeutics at McGill University, affiliated to the Douglas Hospital Research Center.

   Tel. (514) 766-2010
   pedro.rosa@mcgill.ca

   Administrator: Silvana Aguzzi, McGill University
   Tel. (514) 766 2010
   silvana.aguzzi@mcgill.ca

3. The Centre is recognized as an official Senate approved McGill Research Centre.

4. The McGill Senate approved the Centre as the McGill Centre for Studies in Aging on October 1st, 1984.

5. The ***URL* of the Research Centre's or Network's web site is** http://www.aging.mcgill.ca

   *This website contains the following information:*
   - all sources of funding support,
   - the List of Members and their institutional affiliation,
   - the activities supported by the Research Centre, Core Facility or Network, and
   - Annual Reports.

6. A summary of the past year's goals and objectives, programs and research priorities and any changes to these that may have occurred during the past year. Please indicate the extent to which the objectives have been met. (**limit 200 words**)

The McGill University Research Centre for Studies in Aging (MCSA) achieved all goals and objectives expected for 2016. Under the coordination of the Education Committee, the MCSA successfully accomplished a series of Knowledge Transfer and Public Education activities including 30 Brainy Boomer Lectures and two interactive kiosks located at the Le Carrefour 50-Plus and at the McGill Health Fair for Staff and Faculty. In addition, the MCSA effectively integrated Affiliate/Associate members and Donors by promoting an annual reception and organizing a team to participate in the Marathon Oasis. Similarly, for health professionals, the Centre offered lectures by world-class clinician scientists during the symposium for the 30th Anniversary and the Molson's Lecture Series.

In 2016, the MCSA enhanced base of participants of our web-based cognitive training program called Program for the Prevention Of Neurodegenerative Disease in Everybody at Risk (PONDER) through various information presentations and/or workshops. The outreach of PONDER has dramatically increased.

As part of our research efforts, the MCSA continues to foster private partnerships to expand the research capacity to novel neuroimaging techniques capable to better diagnose dementia as well as dementia therapies. Similarly to previous years, in 2016, we have made a number of significant discoveries published in reputable and high impact journals (see references). The Centre has been extremely successful in obtaining operating grants. Finally, from a business development perspective, the donation strategy implemented in 2016 resulted in a surplus of 32% of our donations.

7. Please document **the major achievements** resulting from the use of the Funds from the Faculty, including any advances in knowledge, relevant publications, or international collaboration. You may select from the menu of reporting items/performance indicators in Appendix 1 that may be relevant, noting that the menu list is not exhaustive. (Please limit your response to a maximum of **1 page of prose. Please include lists of publications, grants, activities as appendices.)**

The Funds from the Faculty of Medicine supporting the Centre contribute exclusively to two of the administrative positions of MCSA: (1) A management position, held by Silvana Aguzzi, who is involved in administrative, research and KT activities of the Centre, and (2) a development position (part-time), held by Alexandra Triantafillopoulos, who contributes to KT and fund-raising related activities of the Centre. Both positions also contribute to research/administrative activities as they assist the Director of the clinical research unit Dr. Gauthier, Dr. Rosa-Neto and Dr. Jens Pruessner. Achievements resulting from the use of Funds from the Faculty should thus make reference to research, teaching and administrative accomplishments. These are:

**7.1 KT activities:**

- **Public lecture series (Brainy Boomers;** 24 lectures throughout the 2016/2017 report period); this lecture series takes place at various dates and locations throughout Montreal. In 2016/2017, the McGill University Research Centre for Studies in Aging held a total of twenty-four public lectures (see appendix). The public lecture series continues to be one of the core KT activities of our Centre. For the 2017/2018 reference period, we plan an equal number of these lectures and a special celebration to inaugurate the 10$^{th}$ anniversary celebration of the lecture series.
- **"Le Salon Carrefour 50 ans+** (April 22, 23, 24, and 2016) is an exhibition annually held at Place Bonaventure. A total of 635 participants visited the MCSA booth and received information packages regarding healthy aging and dementia prevention prepared by the education committee
- **Annual member and Donor meeting** (June 16, 2016) At this event, the Centre's scientists shared accomplishments in research findings and discoveries of the past year, and explained new clinical trials and their therapeutic promises to members and donors of the Centre. A special guest was

invited by one of our Donors, an eight-year-old boy James Deko that gave a presentation on Alzheimer's Disease and received a standing ovation.

- **30th Anniversary Celebration Symposium** (September 21, 2016) "ADVANCES IN RESEARCH ON BRAIN HEALTH" **–** the world-class guest speakers Prof. Dr. Monique M.B. Breteler MD (Director of Population Health Sciences at the German Center for Neurodegenerative Diseases -DZNE), and Prof. Clive Ballard, MD, PhD (Executive Dean of University of Exeter Medical School, UK) were invited to mark our 30th year celebration of the MCSA Centre. All past and present MCSA Directors, attended, Dr. Jacqueline McClaran, Dr. Serge Gauthier, Dr. Judes Poirier, Dr. Jens Pruessner and Interim-Director Dr. Pedro Rosa-Neto. The Symposium was organized by the MCSA Education Committee and was a free admission event funded by various sponsors ($7,310.00) and 185 participants attended.
- **MCSA Team event OASIS Marathon Montreal** (September 25, 2016). For the sixth time, members and friends of MCSA participated as a group in the Montreal Oasis Marathon in the 5, 10, 21 and 42KM events to increase MCSA visibility and to promote healthy aging prevention. This KT event is also a fundraiser for MCSA.
- **McGill Employee Health Fair 2016- Health & Wellbeing Program for Faculty and Staff, McGill University** (October 14, 2016); MCSA participated in the sixth annual Health Fair for Staff and Faculty with its own booth; its goal was to promote the benefits of healthy and active lifestyle , and to help employees obtain information on achieving their goals.
- **MCSA Newsletter April 2017** – New incentive to promote MCSA activities and fundraising.
- **Molson KT lecture series** (Douglas Hall, May 6, 2016) Launched in 2013, this initiative was organized by MCSA with the help and financial support of the Molson family and featured highly renowned international speakers in the field of Alzheimer disease and dementia including Prof. Linda J. Van Eldik, PhD (University of Kentucky – Alzheimer's Disease Research Center) and Prof. Paul Edison PhD (Imperial College, UK). This lecture was accredited by the McGill University Faculty of Medicine Continuing Professional Development (CPD).
- **3e Congrès Québécoise sur la Maladie D'Alzheimer et Les Maladies Apparentées, Sherbrooke, Quebec** (November 2 to 4, 2016)
- Participation on **The Annual Refresher Course** (December 7, 2016) organized by the Department of Family Medicine / Training & Education / Continuing Professional Development).

**7.2 Training Activities**

- **Student journal club** of the McGill University Research Centre for Studies in Aging with speakers from McGill or other Montreal universities' faculty, held weekly.
- **Graduate and postgraduate student training** (continuous) The MCSA's core scientists contribute to the training of over 25 graduate (see names attached) and postgraduate students across various departments at McGill University.
- **The International Research exchange program** included fellows from United Kingdom, China, Singapore, Brazil and Belgium. The training program aims at developing analytical skills in neuroimaging.
- **Training program with Singapore National Neuroscience Institute (NNI).** Visit from delegation behavioral neurologists from the NNI visited the MCSA from February 20 to 24, 2017. The team of clinician scientists under the leadership of Dr. Nagaendran Kandiah interacted with various members of the MCSA. The groups exchanged experiences on bioethics and dementia, genetic counselling, fluid biomarkers, Positron Emission Tomography (PET) scans and data sharing. The group extended these discussions with the Montreal Neurological Institute radiochemist, Dr. Gassan Massarweh and nuclear medicine physician, Jean Paul Soucy. Dr. Pedro Rosa-Neto visited the NNI in Singapore on March 6th to further work in a collaborative project between the two institutions.

**7.3 Research Activities:**

The Scientists of the Centre are engaged in numerous research projects locally, provincially, nationally, and internationally, as evidenced by the extensive number of publications (see appendix). Some of the key areas of research are investigations into factors promoting healthy aging (unit leader Dr. Pruessner), in part through the Program for the Prevention Of Neurodegenerative Disease in Everybody at Risk –PONDER (http://ponder.mcgill.ca/).

Within the translational imaging laboratory of the Centre, Dr. Rosa-Neto develops ground breaking neuroimaging techniques and analytical frameworks for modeling neurodegenerative processes including deposition of protein aggregates, metabolic abnormalities, cell transport systems, and neuroreceptors dysfunction. The laboratory encompasses a cohesive multidisciplinary team conducting integrative and multimodal neuroimaging research in human diseases as well as disease models. This unit collaborates with an extensive network of laboratories and is committed to scientific training in the field of neuroimaging. This year, translational imaging laboratory published in high impact journals such as Nature Neuroscience, Molecular Psychiatry, and Alzheimer's dementia.

The Alzheimer's Disease Research Unit (ADRU) led by Dr. Gauthier has published two papers in Lancet Neurology. The ADRU conducts industry-sponsored and academic clinical trials, including the NIH-sponsored Dominantly Inherited Alzheimer Network Trial (DIAN-TU) and the National Dementia Cohorts part of the Canadian Consortium on Neurodegeneration in Aging (CCNA). The ADRU is conducting ground-braking clinical trials with Merck, Sharp & Dohme and Enigma Radiopharmaceuticals on a novel PET tau imaging agent called MK6240. It is expected that the MK6240 will accelerate clinical trials on Alzheimer's disease. The MCSA, KalGene Pharmaceuticals and the National Research Council of Canada (NRC) have signed an agreement to develop a promising novel Alzheimer's treatment in Canada. This treatment will be tested in a phase I clinical trial led by Dr. Pedro Rosa-Neto and Dr. Serge Gauthier through a $ 1.5 million grant provided by the Weston Brain Institute. Dr. Pedro Rosa-Neto and Dr. Serge Gauthier will also conduct another observational study focusing on neuroinflammatory pathways in Alzheimer's disease sponsored by Weston Brain Institute ($ 1.5 million) and CCNA-CIHR ($120 thousand).

**7.4 Clinical Activities:**

The clinical activities can be categorized into memory clinic activities, efforts for early diagnosis of neurodegenerative disease, and clinical trials. These are consistent activities of the Centre coordinated by the Director of the ADRU, Dr. Serge Gauthier. The Clinic's primary focus is evaluation to provide treatments – both symptomatic and preventive - to ensure best practice care for patients and to enhance the quality of life for patients and caregivers.

Dr. Rosa-Neto's clinical work focuses on patients with atypical and early onset dementia. He established advanced clinical protocols for investigating these clinical populations. The lumbar puncture (LP) clinic lead by Dr. Rosa-Neto completed 100 patients. This is the only clinic devoted to conduct diagnostic LPs in Canada. Dr. Rosa-Neto is the director of the training program in LPs, which is accredited by the Royal College of Physicians.

8. Please provide a **List of New Members** who joined in the past year (Full, Associate, Trainee noting whether graduate student or post-doctoral fellow) and **institutional affiliations**. Please also indicate any members who have left the Centre or Network. Add rows as necessary.

| Last, First Name | Member Type | Institutional Affiliation(s) |
|---|---|---|
| Gonnerman, Laura | Associate Member | McGill |
| Klein, Denise | Associate Member | McGill |
| Phillips, Natalie | Affiliate Member | Concordia |
| Rios-Romenets, Silvia | Affiliate Member | University of Antioquia |
| Sheldon, Signy | Associate Member | McGill |
| Lussier, Firoza | Trainee Member | McGill |
| Horowitz, Kayla | Trainee Member | McGill |
| Quispialaya, Kely | Trainee Member(PhD) | McGill |
| Therriault, Joseph | Trainee Member (MSC) | McGill |
| Khan, Haseeb | Trainee Member | Concordia, McGill |
| Ba, Maowen | Visiting Scholar | Yantai Yuhuangding Hospital , China |
| Li, Xiaofeng | Visiting Scholar | Chongqing Medical University , China |
| Ng, Kok Pin | Visiting Scholar | National Neuroscience Institute, Singapore |
| Struyfs, Hanne | Graduate Research Trainee | University of Antwerp, Belgium |

Please indicate total number of members: 80

Please indicate total number of McGill Faculty of Medicine members: 52

9. Please describe how your activities align with the Academic or Research mission of the Faculty of Medicine and/or other Faculties at McGill focusing on the activities for the current year and strategic plans for the subsequent year (**limit 200 words**)

The mission of the Faculty of Medicine of McGill University is to advance learning through teaching, scholarship, and service to society. This includes but is not restricted to offering graduate students the best education available, carrying out excellent scholarly and research activities, and providing services to society in line with our academic strengths. MCSA is meeting the objectives that derive from this mission, by offering graduate students of MCSA superior training opportunities through participation in research programs using cutting-edge research methodologies (e.g., neuroimaging, pharmacology, cognitive and behavioural testing), allowing them early exposure to leaders in the field through student participation in international conferences, and researcher invitations to MCSA, for example through the Molson lecture series. This superior training is possible and complemented by superior research performance of the Centre, evidenced by high productivity of our core and affiliated members, numerous high impact publications, both directly at the Centre and through our affiliated members at McGill University.

In addition, the MCSA shares the global outreach vision from the Faculty of Medicine. We engage in international programs focusing in prevention and biomarker research in dementia. Core members of the Centre working on AD research have also been very successful over the past year in obtaining research grants to support their research activities. In 2016/2017, members of the Centre have been able to work with research funding from CIHR, FQR-S, NSERC, AD Society of Canada and USA.

Current MCSA activities with Asia:
A CIHR-China grant on biomarkers in early onset familial Alzheimer's disease (AD) is ongoing with Drs. Jiamping Jia and Serge Gauthier as co-PIs. This has led to parallel work publications on the clinical and research significance of rapid cognitive decline in AD (Alzheimer's & Dementia, 2017), the cost of dementia in China (Lancet Neurology, submitted), and results of a randomized clinical trial of Chinese traditional medicine in vascular dementia (The Lancet, submitted). Of note is that a McGill first year medical student has contributed to the publication on rapid cognitive decline. Drs. Serge Gauthier and Pedro Rosa-Neto are advisors to the Chinese clinical trial network led by Dr. Huali Wang, for selection of and training for clinical and imaging outcomes.

**Work under planning for 2017-2018**

A CIHR-China grant application is under planning with Drs. Huali Wang, Eduardo Chachamovitch, Serge Gauthier, Pedro Rosa-Neto and Jens Pruessner to study culturally adapted ways to diagnose cognitive decline and depression in rural China and Northern Canadian indigenous populations. Of note is the possibility that the McGill developed PONDER website becomes an international tool for data collection and knowledge transfer.
The MCSA has a long-standing partnership with Asian countries in clinical research and practice. Dr. Serge Gauthier is a founding member of the 10-year-old Asian Society Against Dementia (ASAD), which aims at developing common clinical research tools in the field of dementia. Dr. Serge Gauthier has given keynote lectures at most of the annual meetings of the ASAD. Furthermore, clinical research fellows have trained at the MCSA over the years, from Thailand, Singapore and China.

10. Other information:
    Please indicate how the Research Centre, Core Facility or Network has:

- Tackled or plans to tackle issues in a manner that may not otherwise have been achievable without the financial support of the Faculty of Medicine
- Increased or is planning to increase the scale and focus of research activities
- Facilitated multidisciplinary, multi-institutional or international collaborations
  (Please limit response to **200 words**)

It is difficult to envision how MCSA could continue its activities without the funding received by McGill University. Support from McGill contributes to the administrative positions of the Centre, which are vital to administer, coordinate and perform many of the KT activities of MCSA. These positions additionally are pivotal for many of the clinical and research activities of the Centre, which only when linked together allow for the strong productivity the Centre has continually shown.
Plans to increase the scale and focus of research activities must be responded to negatively for the following reason. In the current funding environment and landscape, with CIHR expected to have a funding rate below 10% (which represents an all-time low), the researchers of the Centre will consider themselves glad to maintain their current research activity.

One of the most important challenges of the centre in 2017 is to upgrade our basic infrastructure to enhance the integration between clinical care and research. In order to progressively adopt the best clinical practices guidelines, the centre urgently needs to implement electronic medical records, renovate

computational network and integrate with the Quebec medical records. A clinical nurse will enhance our clinical capacity.

**The Year End Financial Report** reports on:

- Expenditure of funding provided by the Faculty of Medicine and other sources, towards meeting the objectives of the Research Centre or Network; and
- Details of any in-kind contributions provided to the Centre or Network.
- Please include a projected budget (including request from Faculty of Medicine) for the coming year
- See **Appendix 2** for the "Year End Financial Report"

# Appendix 1

## Quantitative and Qualitative Performance Indicators

1 a. Publications from Core-PIs (Dr. Gauthier, Dr. Rosa-Neto, Dr. Pruessner) in 2016 / 2017 report period

**Dr. Serge Gauthier**

**Articles and book chapters**

Tomaszewski S, Gauthier S, Wimo A, Rosa-Neto P. Combination therapy of anti-tau and anti-amyloid drugs for disease modification in early-stage Alzheimer's disease: social-economic considerations modeled on treatments for tuberculosis, HIV/AIDS and breast cancer. Journal of Prevention of Alzheimer's disease 3: 164-172, 2016.

Gauthier S, Albert M, Fox N, Goedert M, Kivipelto M, Mestre-Ferrandiz J, Middleton LT. Why has therapy development for dementia failed in the last two decades? Alzheimer's & Dementia, 12, 60-64, 2016.

Vasil N, Pinard GF, Gauthier S. Troubles neurocognitifs. In Psychiatrie Clinique, Approche bio-psycho-sociale, 4th Edition. Lalonde P, Pinard GF [Eds]. Chenelière Education, Montréal, 578-616, 2016.

Gauthier S, Rosa-Neto P, Kass, JS. Ethical considerations for the use of the next-generation Alzheimer drugs in symptomatic and at risk persons. Continuum Ethical Perspectives, 22, 615-618, 2016.

Florian H, Meier A, Gauthier S, Lipschitz S, Lin Y, Tang Q, Othman AA, Robieson WZ, Gault LM. Efficacy and safety of ABT-126 in subjects with mild-to-moderate Alzheimer's disease on stable doses of acetylcholinesterase inhibitors: a randomized, double-blind, placebo-controlled study. Journal of Alzheimer's Disease, 51, 1237-1247, 2016.

Winblad B, Amouyel P, Andrieu S, Ballard C, Brayne C, Brodaty H, Cedazo-Mingyez A, Dubois B, Edvardsson D, Feldman H, Fratiglioni L, Frisoni GB, Gauthier S, Georges J, Graff C, Iqbal K, Jessen F, Johansson G, Jonsson L, Kivipekto M, Knapp M, Mangialasche F, Melis R, Nordberg A, Rikkert MO, Qiu C, Sakmar TP, Scheltens P, Schneider LS, Sperling R, Tjernberg LO, Waldemer G, Wimo A. Defeating Alzheimer's disease and other dementias: priority for European science and society. Lancet Neurology 25: 455-532, 2016.

Schoemaker D, Buss C, Head K, Sandman CA, Davis EP, Chakravarty MM, Gauthier S, Pruessner J. Hippocampus and amygdala volumes from magnetic resonance images in children: assessing accuracy of Freesurfer and FSL against manual segmentation. Neuroimage, doi 10.1016/j.neuroimage.2016.01.038. 129; 1-14, 2016.

Pascoal TA, Mathotaarachchi S, Mohades S, Benedet AL, Chung CO, Shin M, Wang S, Beaudry T, Kang MS, Soucy JP, Labbe A, Gauthier S, Rosa-Neto P for the Alzheimer's Disease Neuroimaging Initiative. Amyloid-ß and hyperphosphorylated tau synergy drives metabolic decline in preclinical Alzheimer's disease. Molecular Psychiatry, doi:10.1038/mp.2016.37.

Mathotaarachchil S, Wang S, Shin M, Pascoall TA, Benedet AL, Kang MS, Beaudry T, Fonov VS, Gauthier S, Labbe A, Rosa-Neto P . VoxelStats: a MATLAB package for multi-modal voxel-wise brain image analysis. Frontiers in Neuroinformatics, 10: 20, 2016.

Dubois B, Feldman H, Scheltens P, Aisen P, Andrieu S, Bakardjian H, Benali H, Bertram L, Blennow K, Broich K, Cavedo E, Crutch S, Dartigues JF, Duykaerts C, Epelbaum S, Frisoni G, Gauthier S, Genthon R, Gouw A, Habert MO, Holtzman D, Kivipekto M, Molinuevo JL, O'Bryant S, Rabinovici G, Rowe C, Salloway S, Schneider L, Sperling R, Teichmann M, Carillo M, Cummings J, Jack C, Hampel H. Preclinical Alzheimer's disease: definition, natural history and diagnostic criteria. Alzheimer's & Dementia, 12, 292-323, 2016.

Gauthier S, Feldman HH, Schneider LS, Wilcock GK, Frisoni GB, Hardlund JH, Bentham P, Kook KA, Wischik DJ, Schelter BO, Davis CS, Staff RT, Bracoud L, Shamsi K, Storey JM, Harrington CR, Wischik C. Safety and efficacy of tau aggregation inhibitor therapy in mild to moderate Alzheimer's disease: a Phase 3 trial of leuco-methylthioninium bis(hydromethanesulfonate) (LMTM). The Lancet, doi.org/10.1016/S0140-6736(16)31275-2.

Abushakra S, Porsteinsson A, Vellas B, Cummings J, Gauthier S, Hey JA, Power A, Hendrix S, Wang P, Shen L, Sampalis J, Tolar M. Clinical benefits of tramiprosate in Alzheimer's disease are associated with higher numbers of APOE4 alleles: the ÄPOE4 Gene-Dose Effect". Journal of Prevention of Alzheimer's disease, 3, 219-228, 2016.

Ba M, Kong M, Li X, Ng KP, Rosa-Neto P, Gauthier S. Is apoE ε 4 a good biomarker for amyloid pathology in late onset Alzheimer's disease? Translational Neurodegeneration, 2016, 5:20. DOI:10.1186/s40035-016-0067-z.

Laforce R, Rosa-Neto P, Soucy JP, Rabinovici GD, Dubois B, Gauthier S, on behalf of the consensus meeting participants. Canadian Consensus guidelines on use of amyloid imaging in Canada: update and future directions from the Specialized Task Force on Amyloid Imaging in Canada (STAG). Canadian Journal of Neurological Sciences, 43, 503-512, 2016.

Li X, NG KP, Ba M, Rosa-Neto P, Gauthier S. Dementia and Bioethics. Mental Health and Illness in the Elderly, Chiu H, Shulman K [Eds], Springer Nature Singapore, DOI: 10.1007/978-981-10-0370_6-1.

Zimmer ER, Parent MJ, Souza DG, Leuzy A, Lecrux C, Kim HI, Gauthier S, Pellerin L, Hamel E, Rosa-Neto P. [18F]FDG PET signal is driven by astroglial transport. Nature Neuroscience. DOI:10.1038/nn.4492.

Ba M, Li X, Ng KP, Pascoal TA, Rosa-Neto P, Gauthier S for the Alzheimer Disease Neuroimaging Initiative. The prevalence and biomarker characteristics of rapidly progressive Alzheimer's disease from the Alzheimer's Disease Neuroimaging Initiative database. Alzheimer's & Dementia - TRIC. DOI:10.1016/j.trci.2016.12.005.

Schoemaker D, Poirier J, Escobar S, Gauthier S, Pruessner J. Selective familiarity deficits in otherwise cognitively intact aging individuals with genetic risk for Alzheimer disease. Alzheimer's & Dementia: Diagnosis, Assessment & Disease Monitoring, 2, 132-144, 2016.

Gauthier S. Trial designs. Dementia, 5th Edition, 2015, Ames D, Burns A, O'Brien J (Eds), in press.

Gauthier S. Dementia Care: International Perspectives: Canada. Dementia Care: International Perspectives. Burns A, Robert P [Eds]. Oxford University Press, in press.

Kahle-Wrobleski K, Andrews JS, Belger M, Ye W, Gauthier S, Rentz DM, Galasko D. Dependence levels as interim clinical milestones along the continuum of Alzheimer's disease: 18 months results from the GERAS observational study. The Journal of Prevention of Alzheimer's Disease, DOI.org/10.14283/jpad2017.2.

Gauthier S. Research update on Alzheimer's disease and introduction to the Expert Review of Neurotherapeutics special issue. Expert Review in Neurotherapeutics, in press.

Ismail Z, Agüera-Ortiz L, Brodaty H, Cieslak A, Cummings J, Fischer CE, Gauthier S, Geda YE, Herrmann N, Kanji J, Lanctôt KL, Miller DS, Mortby ME, Onyike CU, Rosenberg PB, Smith EE, Smith GS, Sultzer DL, Lyketsos C for the NPS Professional Interest area of the International Society to Advance Alzheimer's Research and Treatment (NPS-PIA and ISTAART). The Mild Behavioral Impairment Checklist (MBI-C): a rating scale for neuropsychiatric symptoms in pre-dementia populations. Journal of Alzheimer Disease, doi 10.3233/JAD-160979.

Bergeron D, Verret L, Poulin S, Bouchard R, Bocti C, Fulop T, Lacombe G, Gauthier S, Nasreddine Z, Laforce R. Multicenter validation of an MMSE-MoCA conversion table. Journal of the American Geriatrics Society, in press.

Jia J, Gauthier S, Pallotta S, Ji Y, Wei W, Xiao S, Peng D, Guo Q, Wu L, Chien S, Kuang W, Zhang J. Rapid cognitive decline in dementia due to Alzheimer's disease: relevance to current and future drug therapies. Alzheimer's & Dementia, doi.org/10.1016/j.jalz.2017.01.007.

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Therapeutic efficacy of the ginkgo special extract EGb761® within the framework of the mitochondrial cascade hypothesis of Alzheimer's disease. World Journal Biological Psychiatry, in press.

Soto M, Abushara S, Bell J, Cummings J, Siffert J, Robert P, Vellas B, Lyketsos CG and Task Force Members (Gauthier S). Progress in treatment development for neuropsychiatric symptoms in Alzheimer's disease: focus on agitation and aggression. The Journal of Prevention of Alzheimer's Disease. Submitted.

Cheewakriengkrai L, Rowley J, Mohades S, Zimmer ER, Shin M, Parent MJ, Beaudry T, Wu L, Fonov V, Eskildsen SF, Leuzy A, Dauar M, Soucy JP, Gauthier S., Rosa-Neto P. Linear and non linear associations among biomarkers of Alzheimer's disease. Journal of Alzheimer Disease. Submitted.

Parent M, Zimmer E, Shin M, Kang MS, Fonov V, Mathieu A, Aliaga A, Kostikov A, Do Carmo S, Dea D, Poirier J, Soucy JP, Gauthier S, Cuello C, Rosa-Neto P. Longitudinal imaging biomarker abnormalities in a transgenic rat model of amyloidosis: evidence for early functional impairments. Journal of Neurosciences. Submitted.

Diehl-Schmid J, Gauthier S, Belleville S, Racine E, Jox R, Turecki G, Richard-Devantoy S. Suicide and assisted dying in dementia: what we know and what we need to know. A narrative literature review. International Psychogeriatrics. Submitted.

Benedet AL, Yu L, Labe A, Mathotaarachchi S, Pascoal TA, Shin M, Kang MS, Beaudry T, Poirier J, Gauthier S, Rouleau G, Bennett DA, Rosa-Neto P for the Alzheimer Disease Neuroimaging Initiative. I*n vivo* and *post-mortem* evidence that CYP2C19 polymorphism (rs4388808) mitigates Alzheimer's disease pathophysiology. Biological Psychiatry. Submitted.

Wallace LM, Ankudowich E, Naumova D, Pruessner JC, Joober R, Gauthier S, Pasvanis S, Rajah M. Family history and APOE4 risk for Alzheimer's disease impact the neural correlates of episodic memory by early midlife. Neuroimage: Clinical, Submitted.

Savaskan E, Mueller H, Hoerr R, von Gunten A, Gauthier S. Treatment effects of Ginkgo biloba extract EGb 761 on the spectrum of behavioral and psychological symptoms of dementia: meta-analysis of randomized controlled trials. Journal of Psychiatric Research. Submitted.

Bohbot VD, Andersen N, Bherer L, Chertkow H, Dahmani L, Ducharme D, Fouquet C, Gauthier S, Konishi K, Kurdi V, Lerch JP, Rajah N, Sham R, Sodums DJ. Spatial memory training induces plasticity in the human hippocampus and neocortex. Nature Neuroscience. Submitted.

Rajah MN, Wallace LMK, Manning L, Patel R, Yu EH, Swierkot A, Ankudowich E, Naumova D, Pruessner J, Chakravarty M, Joober R, Gauthier S, Pasvanis S. Family history and APOE-4 risk for Alzheimer's disease impact the neural correlates of episodic memory at midlife. Human Brain Mapping. Submitted.

Wang S, Mathotaarachchi S, Pascoal T, Parent M, Beaudry T, Benedet A, Shin M, Kang MS, Dansereau C, Park MT, Fonov V, Carbonell F, Chakravarty M, Bellec P, Gauthier S, Rosa-Neto P. The loss of intra-hippocampal connectivity is driven by a declining anterior hippocampal network across the Alzheimer's disease spectrum. Brain Structure and Function, Submitted.

Pascoal TA, Mathotaarachchi S, Shin M, Park AY, Benedet AL, Mohades S, Kang MS, Soucy JP, Aston JAD, Gauthier S, Rosa-Neto P for the Alzheimer Disease Neuroimaging Initiative. Biomarkers signature of imminent neurodegeneration in preclinical Alzheimer's disease. Nature Neuroscience. Submitted.

Brayet P, Petit D, Baril AA, Gosselin N, Gagnon JF, Soucy JP, Gauthier S, Kergoat MJ, Carrier J, Rouleau I, Montplaisir J. Brain imaging during rapid-eye-movement sleep successfully in identifies amnestic MCI. Sleep Medicine. Submitted.

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Journal of American Medical Association.

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**Published abstracts**

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**Dr. Pedro Rosa-Neto**

**Publications (Peer Reviewed Papers)**

Eduardo R Zimmer, Maxime J Parent, Débora G Souza, Antoine Leuzy, Clotilde Lecrux, Hyoung-Ihl Kim, Serge Gauthier, Luc Pellerin, Edith Hamel & Pedro Rosa-Neto [18F]FDG PET signal is driven by ß astroglial glutamate transport. Nat Neurosci. 2017.

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Tam A, Dansereau C, Badhwar A, Orban P, Belleville S, Chertkow H, Dagher A, Hanganu A, Monchi O, Rosa-Neto P, Shmuel A, Breitner J, Bellec P; Alzheimer's Disease Neuroimaging Initiative. A dataset of multiresolution functional brain parcellations in an elderly population with no or mild cognitive impairment. Data Brief. 2016 Nov 18;9:1122-1129.

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Polymorphism in Cytochrome P450 Gene Is Associated with Alzheimer's Pathology. Benedet AL, Yu L, Labbe A, Mathotaarachchi SS, Shin M, Pascoal TA, Beaudry T, Gauthier S, Bennett DA, Rosa-Neto P. Alzheimer's Association International Conference. Toronto, ON. July 22-28, 2016.

Voxel-Wise Logistic Regression Improves Prediction Accuracy for Developing Alzheimer's Disease. Mathotaarachchi SS, Pascoal TA, Shin M, Benedet AL, Kang MS, Beaudry T, Fonov VS, Gauthier S, Labbe A, Rosa-Neto P. Alzheimer's Association International Conference. Toronto, ON. July 22-28, 2016.

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Amyloid-β and Hyperphosphorylated Tau Synergy Drives Clinical Progression to Alzheimer's Disease. Pascoal TA, Mathotaarachchi SS, Shin M, Benedet AL, Kang MS, Mohades S, Beaudry T, Soucy JP, Gauthier S, Rosa-Neto P. Alzheimer's Association International Conference. Toronto, ON. July 22-28, 2016.

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Clinical Utility of Amyloid Imaging in Differential Diagnosis of Atypical/Unclear Dementias and Its Impact on Caregivers. Laforce R Jr, Bensaidane MR, Bouchard R, Fortin MP, Houde M, Rosa-Neto P, Poulin S, Verret L, Soucy JP, Beauregard JM. American Academy of Neurology Annual Meeting. Vancouver, BC. April 15-21, 2016.

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**Dr. Jens Pruessner**


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I b. Current active research grants of the core PIs (Dr. Gauthier, Dr. Rosa-Neto, Dr. Pruessner)

**Industry Sponsored Clinical Trials**

2016-2019

Exploratory Case-Controlled, Longitudinal Biomarker Study in Subjects with Alzheimer's Disease or Behavioural Variant Frontotemporal Dementia and Untreated Matched Control (Protocol number: TRx-GTD-025). Sponsor: TauRx Therapeutics Ltd.

2016-2018

Effect of LY3202626 on Alzheimer's Disease Progression as Measured by Cerebral 18F-AV-1451 Tau-PET in Mild Alzheimer's Disease Dementia (Protocol number: I7X-MC-LLCF(a)). Sponsor: Eli Lilly and Company.

2016-2017

An Open-Label, Extension Study of the Effects of Leuco-methylthioninium bis(hydromethanesulfonate) in Subjects with Alzheimer's Disease or Behavioural Variant Frontotemporal Dementia (Protocol number: TRx-237-020). Sponsor: TauRx Therapeutics Ltd.

2016

Randomized, double-blind, parallel-group, placebo-controlled, fixed-dose study of Lu AE58054 in patients with mild-moderate Alzheimer's disease treated with donepezil; study 2 (Protocol number: 14862A). Sponsor: H. Lundbeck

2016-2017

An open-label extension study to evaluate the long-term safety and tolerability of Lu AE58054 as adjunctive treatment to donepezil in patients with mild-moderate Alzheimer's disease (Protocol number: 14861B). Sponsor: H. Lundbeck

2015-2019

A Phase II/III Randomized, Double-blind, Placebo-Controlled Multi-Centre Study of 2 Potential Disease Modifying Therapies in Individuals at Risk for and with Dominantly Inherited Alzheimer's disease (Protocol number: DIAN-TU-001). Sponsor: Washington University in St. Louis (The Dominantly Inherited Alzheimer's Network Trials Unit)

2015-2017

A Phase 3 Clinical Trial to Evaluate the Efficacy and Safety of [18F]NAV4694 PET for Detection of Cerebral β-Amyloid When Compared With Postmortem Histopathology (NAV4-02) Sponsor: Navidea.

2013-2015

A Double-Blind, Placebo-Controlled, Randomized, Parallel Group, 12-Month Safety and Efficacy Trial of Leuco-methylthioninium bis (hydromethanesulfonate) in Subjects with Behavioral Variant Frontotemporal Dementia (bvFTD) (Protocol number TRx-237-007). Sponsor: TauRx

2013-2015

A phase III randomized, placebo-controlled, parallel-group, double blind clinical trial to study the efficacy and safety of MK-8931 (SCH 900931) in subjects with amnestic mild cognitive impairment due to Alzheimer's Disease (prodromal AD) (Protocol MK-8931 019). Sponsor: Merck

2017

Exploring the clinical utility of tau imaging agent[18F]MK6240. Phase one study for determination of dosing and safety of a novel imaging agent. Sponsor: Enigma Pharmaceuticals.

**Research Grants of Dr. Serge Gauthier**

2011-2016
CIHR co-investigator with S. Belleville, O, Monchi. - $113,217/year.
**Understanding memory changes and brain plasticity in MCI.**

2012-2016
Pfizer-FRSQ Co-investigator with L. Collins, H. Chertkow, S. Duchesne $599,621 total.
**Entre le laboratoire et le chevet: validation de bio-marqueurs optimisés par résonnance magnétique pour le diagnostic clinique précoce et le prognostic dans la maladie d'Alzheimer.**

2012-2017
CIHR Co-investigator with N. Gosselin, J. Montplaisir, L De Beaumont, J.Gagnon, JP Soucy.$122,307/ year.
**Obstructive sleep apnea and Mild Cognitive Impairment.**

2012-2016
CIHR Co-investigator with V. Bohbot, H. Chertkow, J. Lerch, M. Rajah. $254,484 per year
**Virtual reality based spatial memory intervention for patients with Mild Cognitive Impairment.**

2012-2016
RQRV Co-investigator with S. Belleville, O. Monchi, N. Bier, JM Villalpendo, P. Nolin. $8,500. **Interventions cognitives: faire appel à la réalité virtuelle pour favoriser le transfert aux situations de vie complexe.**

2012-2016
CIHR Team Grant, China-Canada. PI with Drs J. Jia, D. Doucet, G.Y. Hsiung, A. Labbe, P. Rosa-Neto, A.D. Sadovnick. $250,000 per year.
**Diagnostic biomarkers for pre-dementia Alzheimer Disease**

2012-2016
CQDM network and research grant. Co-investigator with Drs R. Hodge, P. Belec, S. Belleville, J. Doyon, O. Monchi, Y. Deschaintre, C. Bocti. $1,498,786 total amount.
**A new window on mitochondrial dysfunction in Alzheimer's disease.**

2013-2016
CIHR co-investigator with N. Rajah, J. Pruessner, J. Breitner, C. Grady. $619,42total amount.
**Structural and functional neuro-anatomical correlates of memory for text across the adult lifespan.**

2012-2016
Molson Knowledge Exchange Fund. Co-applicant with P. Rosa-Neto (PI), J. Pruessner, A. Leuzy. $25,000.
**Molson Master Class Series in Alzheimer's disease**

2013-2016
Fond d'innovation Pfizer-FRQS. Co-applicant with S. Belleville (PI), D.Boyer, F. Calon, H. Chertkow, S. Duchesne, P. Gaudreau, C. Hudon, MJ Kergoat, A. Leblanc, N. Leclerc. $833,076/year.
**Consortium pour l'ídentification précoce de la maladie d'Alzheimer**

2014-2019
CIHR. Co-applicant with H. Chertkow (PI) et al. $4,040,000 to $4,527,000 per year Overall, $70,000 per year for ELSI committee.
**Canadian Consortium on Neurodegeneration in Aging.**

2015-2017

Alzheimer Society of Canada. Co-applicant with Paul Brassard and Sami Suissa. $65,754 Year 1; $72,239 Year 2.
**Influence of the structural differences of statins on the risk of incident Alzheimer's disease.**

**Research Grants of Dr. Pedro Rosa-Neto**

2016-2019
System-wide environmental perturbations transform understanding of relationships between high-dimensional data, exposures, and phenotypes. CIHR Project Scheme- 2016 1st Live Pilot (CAN$ 310,000). Greenwood, Celia; Labbe, Aurelie; Blanchette, Mathieu; Ciampi, Antonio; Evans, Alan; Kleinman, Claudia; Rosa-Neto, Pedro (Co-applicant); Schmidt, Alexandra; Bouchard, Luigi; Hudson, Marie; Tonin, Patricia.

2016-2019
Longitudinal neuroimaging of disease progression and treatment in rodent models of Alzheimer's disease. CIHR Project Scheme- 2016 1st Live Pilot (CAN$ 920,000). Near, Jamie; Chakravarty, Mallar; Breitner, John; Rosa-Neto, Pedro (Co-applicant).

2016-2021
Broad and Deep Analyses in Neurodegeneration (BRAIN). CIHR - Team Grant: Big Data on Dementia (CAN $5,000,000). Anderson, Geoffrey Michael; Borrie, Michael John; Chertkow, Howard Mark; Gauthier, Serge G.; Hofer, Scott Michael; Hogan, David Bryan; Phillips, Natalie Anne; Rockwood, Kenneth ; Smith, Eric Edward; Costa, Andrew Paul ; Dixon, Roger A ; Duchesne, Simon ; Finlay, Barton Brett ; Fortier, Isabel ; Herrmann, Nathan ; Liu-Ambrose, Teresa Y.L. ; Maxwell, Colleen Jean ; Menec, Verena Heidi ; Naylor, C. David ; Rosa-Neto, Pedro (Co-Investigator; CAN $150,000) ; Simard, Martine ; St. George-Hyslop, Peter H. ; Taler, Vanessa ; Tuokko, Holly Anna

2014-2019
Canadian Consortium on Neurodegeneration in Aging - Full Proposal. CIHR - Canadian Consortium on Neurodegeneration in Aging (CCNA) (CAN $4,160,000). Rosa-Neto, Pedro (Co-Investigator; CAN $50,000; Project: Microglial Activation in Alzheimer's disease).

2016-2017
Exploring the clinical utility of the tau imaging agent [18F]MK6240. Merck, Dohme & Sharpe Corporations for McGill University - Internal Funding (CAN $200,000). Rosa-Neto, Pedro (PI); Chakravarty, Mallar; Gauthier, Serge; Massarweh, Gassan; Soucy, Jean-Paul.

2016-2019
Tracking the progression of neuroinflammation and tau aggregates in preclinical Alzheimer's disease. Weston Brain Institute – Transformational Research (CAN $1,500,000). Rosa-Neto, Pedro (PI); Breitner, John; Massarweh, Gassan; Poirier, Judes; Soucy, Jean-Paul.

2016-2019
Safety and efficacy of a novel amyloid-clearing therapeutic KAL-ABP-BBB in early Alzheimer's disease patients. Weston Brain Institute – Early Phase Clinical Trials 2015 (CAN$ 1,496,597). Rosa-Neto, Pedro (PI); Chakravarty, Balu; Gauthier, Serge; Stanimirovic, Danica; Waterson, Michael; Yoganathan, Nathan.

2015-2016
High-resolution memory-circuit biomarkers for identifying risk for Alzheimer's disease. Weston Brain Institute – Canada: Rapid Response 2015 (CAN$ 148,225). Chakravarty, Mallar; Breitner, John; Rosa-Neto, Pedro (Co-applicant); Pruessner, Jens, Poirier, Judes.

2015-2019
Integrated Platform for Imaging and Drug Delivery across the Human Blood-Brain Barrier. Brain Canada CQDM Focus on the Brain (CAN$ 1,496,800). Yoganathan, Nathan; Collins, Louis; Stanimirovic, Danica; Chakravarthy, Balu; Soucy, Jean-Paul; Rosa-Neto, Pedro.

2015-2018
Developing new Alzheimer's therapeutics using novel blood brain barrier carrier technology. Brain Canada CQDM Focus on the Brain (CAN$ 2,413,133). Yoganathan, Nathan; Collins, Louis; Soucy, Jean-Paul; Stanimirovic, Danica; Chakravarty, Balu; Rosa-Neto, Pedro (Co-investigator).

2015-2019
Non-invasive Identification of Aβ Plaques in Human Retina for the Diagnosis of Alzheimer's disease. Brain Canada CQDM Focus on the Brain (CAN$ 1,500,000). Soucy, Jean-Paul; Lesage, Frederic; Black, Sandra; Sylvestre, Jean-Philippe; Arbour, Jean Daniel; Rosa-Neto, P; Greenberg, Barry; Hudson, Chris; Farkas, Daniel.

2015-2019
Proof of Concept Trial of Probucol, an Inducer of apoE for Prevention of Alzheimer's Dementia. Weston Brain Institute – Early Phase Clinical Trials 2014 (CAN$ 1,299,954). Breitner, John; Poirier, Judes; Gauthier, Serge; Rosa-Neto, Pedro (Co-applicant); Evans, Alan; Etienne, Pierre; Collins, Louis; Bellec, Pierre; Multhaup; Gerhard; Hoge, Rick.

2015-2019
Imaging-genetics biomarkers for disease risk in Alzheimer's disease. CIHR – operating grant (CAN$ 82,764). Chakravarty, Mallar; Pruessner, Jens; Breitner, John; Knight, Jo; Rosa-Neto, Pedro; Tartaglia, Maria; Voineskos, Aristotle.

2014-2018
FRSQ Programme de bourses de chercheur-boursier «Junior 2» Volet « Clinique et Épidémiologie »FRSQ (CAN$ 271.439)

2013-2017
Diagnostic Biomarkers for pre-dementia Alzheimer Disease.
CIHR team grant (CAN$ 1,000,000). Gauthier, Serge (PI); Jia, Jianping (PI); Doudet, Doris J; Hsiung, Ging-Yuek R; Labbe, Aurelie; Rosa-Neto, Pedro; Sadovnick, A. Dessa.

2011-2016
In vivo quantification of glutamatergic abnormalities in patients with Alzheimer's disease. CIHR (CAN$ 631,700) Rosa-Neto, Pedro (PI); Gauthier, Serge; Soucy, Jean-Paul.

**Research Grants of Dr. Jens Pruessner**

| | |
|---|---|
| 2013-2018 | CIHR open operating grant. PI (J Pruessner) with Drs M. Baldwin, M. Pruessner, K. Nader.<br>*Systematic Investigations into psychological, endocrinological and physiological responses to stress.* $450,000 total amount. |
| 2013-2016 | CIHR open operating grant PI (J Pruessner) with Natasha Rajah, Mark Baldwin *Systematic Investigations into psychological, endocrinological and physiological responses to stress in the brain.* $288,000 total amount. |

2013-2018 CIHR co-investigator with N. Rajah, J. Pruessner, J. Breitner, C. Grady. $619,428 total amount. *Structural and functional neuro-anatomical correlates of memory for context across the adult lifespan*

1 c. New projects and collaborations with national and international researchers in the field:

- Research collaboration with Singapore National Neuroscience Institute (NNI, Singapore) focusing on cohorts of patients at risk to develop dementia due to Alzheimer's disease and cerebrovascular disease.

- Research collaboration with China to diagnose cognitive decline and depression in rural China and Northern Canadian indigenous populations.

- Collaboration of imaging biomarkers in Alzheimer's disease with Fukui University (Prof Hidehiko Okasawa, Japan)

1 d. KT activities detail
*See Brainy Boomer lecture series in attachment*

1 e. Student Member List (in attachment)

1 f. Affiliated/Associate/Adjunct Members List (in attachment)

This report was created by the core-PIs of the McGill University Research Centre for Studies in Aging with the help of the Administrative Assistant of the Centre, Silvana Aguzzi, on March 31, 2017.

Dr. Pedro Rosa-Neto, MD, PhD
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Assistant Professor of Neurology, Neurosurgery and Psychiatry at McGill University,
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